

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.     **(Currently Amended)** A method for providing a soft clip on a signal comprising the steps of  
          providing a current input signal value,  
          establishing threshold values defining a clip region,  
          comparing the current input signal value to the clip region,  
          calculating, if the current input signal value is within the clip region, the  $dV/dt$  values for current and previous input signal values, and  
          establishing, in response to the  $dV/dt$  ~~value~~ values, a smooth clip signal value.
2.     **(Original)** The method of claim 1 further including the step of resetting a clip length counter.
3.     **(Original)** The method of claim 2 wherein the resetting step further includes incrementing a clip event counter.
4.     **(Original)** The method of claim 1 further including the step of substituting the smooth clip signal value for the current input signal value.
5.     **(Original)** The method of claim 1 further including the step of determining whether the compare step has previously established that the current input signal value is within the clip region.
6.     **(Original)** The method of claim 5 further including the steps of  
          branching if the determining step shows that the current input signal value was previously within the clip region, and  
          in response to the branching step, using the previous  $dV/dt$  value to establish a new smooth clip signal value.

7. (Original) The method of claim 6 wherein the new smooth clip signal value is established in accordance with a look-up table value.
8. (Original) The method of claim 6 wherein the new smooth clip signal value is established by calculation.
9. (Original) The method of claim 6 further including the step of incrementing the clip length counter.
10. (Original) The method of claim 6 further including substituting the new smooth clip signal value for the current input signal value.
11. (Original) The method of claim 6 further including  
buffering the current input signal value,  
inserting in the buffer the new smooth clip signal value in place of the current input signal value, and  
extracting from the buffer the appropriate signal value.
12. (Original) A method for providing a soft clip on a signal comprising the steps of  
establishing a sequence of input values in accordance with an input signal,  
buffering the sequence of input values by a predetermined amount,  
determining, for a given input value, whether that input signal causes clipping,  
substituting, for those input values which cause clipping, a smooth clip signal,  
inserting the smooth clip signal into the sequence in place of the corresponding input value, and  
establishing a sequence of output values in accordance therewith.
13. (Original) The method of claim 12 further including the steps of  
detecting when a next input value in the sequence will be outside the clip region,  
modifying a predetermined number of the prior output values to provide a smooth transition between the smooth clip signal and the next input value in the sequence which will be outside the clip region.

14. (Original) The method of claim 12 wherein the determining step includes the step of establishing a threshold.
15. (Original) The method of claim 14 wherein the step of establishing a threshold includes establishing upper and lower thresholds.
16. (Original) The method of claim 15 wherein a first input value in the sequence of input values exceeds a first threshold, and the next subsequent input value exceeds a second threshold, where the first threshold is either upper or lower.
17. (Original) The method of claim 16 wherein the upper and lower thresholds are positive and negative, respectively.
18. (Original) The method of claim 16 further including the step of detecting a transition wherein a first input value exceeds the first threshold and the second input value exceeds the second threshold,  
discontinuing the substituting step associated with the first input value,  
establishing a new substituting step associated with the second input value.
19. **(Currently Amended)** The method of claim 12 further comprising the steps of detecting when a next input value in the sequence will be outside the clip region, and discontinuing the substituting step upon the occurrence of the next input value.
20. (Original) The method of claim 12 further including the step of calculating, if the current input signal value exceeds one of the thresholds,  $dV/dt$  values for current and previous input signal values, and  
establishing, in response to the  $dV/dt$  value, a smooth clip signal value.
21. (Original) The method of claim 20 further including the step of substituting the smooth clip signal value for the current input signal value.
22. (Original) The method of claim 21 further including the step of determining whether the detecting step has previously established that the current input signal value exceeds a threshold.

23. (Original) The method of claim 22 further including the steps of  
branching if the determining step shows that the current input signal value previously  
exceeded a threshold, and  
in response to the branching step, using the previous  $dV/dt$  value to establish a new  
smooth clip signal value.
24. (Original) The method of claim 20 further including the step of resetting a clip length  
counter.
25. (Original) The method of claim 24 wherein the resetting step further includes  
incrementing a clip event counter.
26. (Original) The method of claim 23 further including the step of incrementing the clip  
length counter.
27. (Original) The method of claim 18 further including the steps of  
detecting when a next input value in the sequence will be outside the clip region,  
modifying a predetermined number of the prior output values to provide a smooth  
transition between the smooth clip signal and the next input value in the sequence which will be  
outside the clip region.
28. (Original) The method of claim 19 further including the steps of  
detecting when a next input value in the sequence will be outside the clip region,  
modifying a predetermined number of the prior output values to provide a smooth  
transition between the smooth clip signal and the next input value in the sequence which will be  
outside the clip region.
29. (Original) The method of claim 18 further including the step of  
after the discontinuing step, modifying a predetermined number of the prior output values  
to provide a smooth transition between the smooth clip signal and the next input value in the  
sequence which will be outside the clip region.

30. (Original) The method of claim 29 wherein  $dV/dt$  values are used for the modifying step.
31. (Original) The method of claim 29 wherein the  $dV/dt$  values are determined from the current input sample and the previous input sample.
32. (Original) The method of claim 28 wherein  $dV/dt$  values are used for the modifying step.
33. (Original) The method of claim 32 wherein the  $dV/dt$  values are determined from the current input sample and the previous input sample.
34. (Original) The method of claim 28 wherein the predetermined number of the prior output values is determined as a function of the clip length.
35. (Original) The method of claim 28 wherein the predetermined number of the prior output values is determined as a function of the predetermined amount of buffering.